USDA United States Department of Agriculture

Forest Service

Northeastern Research Station

Research Note NE-380

Vascular Plant Species of the Forest Ecology Research and Demonstration Area, Paul Smith's, New York

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Abstract

Five forest harvest methods (single-tree selection, group selection, two-age cut, shelterwood cut, and clearcut) are being demonstrated on 5-acre tracts near the Adirondack Park Agency's Visitor Interpretation Center (VIC) at Paul Smith's, New York. The tracts are part of the agency's Forest Ecology Research and Demonstration Area. A primary goal is to show visitors what each forest harvest treatments look like and how various logging methods affect different communities of forest plants and wildlife. Listed here is the preharvest inventory of vascular plant species within the five treated and two control tracts at the VIC.

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Americans are increasingly interested in what is happening in their forests. More than ever, they are aware that the Nation's valuable forest resource is important for producing a host of timber and nontimber products ranging from paper and fuelwood to lumber for houses and furniture, serving as sources of food and refuge for a variety of wildlife species, ensuring a clean and perpetual supply of clean water, and nourishing the human spirit by providing numerous opportunities for recreation and esthetic enjoyment.

Many people who have not lived near a "working" forest believe that the periodic harvesting of trees decimates forests. In fact, the opposite is true, though the most commonly used harvest methods affect a forest's appearance, composition, and function in different ways.

Five harvest methods are being demonstrated on 5-acre tracts near the Adirondack Park Agency's Visitor Interpretation Center (VIC) at Paul Smith's, New York (Fig. 1). The tracts are part of the agency's Forest Ecology Research and Demonstration Area. A primary goal of this demonstration project is to show visitors what each forest harvest treatment look like, and how various logging methods affect different communities of forest plants and wildlife. A trail map available at the VIC includes illustrations of five cut and two uncut (control) forest stands. Signs along Jenkins Mountain Road contain brief descriptions of what was done in each stand.

Harvest Methods

Some plant species, including white birch, favor open light conditions, that is, they grow best or are found most often following clearcuts, and may not reproduce or grow well (if at all) in normal forest shade. Certain sun-loving species store seed in forest soils; the seeds germinate only after the forest canopy has been removed. Still other species are shade tolerant; they do not tolerate (grow slowly) in full sunlight and are outcompeted for light and nutrients by faster growing species. The following harvesting methods are listed in order of severity of disturbance they produce and the amount of light that is allowed to reach the ground layer:

- Single-tree selection. About 30 percent of the tree volume was marked and removed as single trees scattered throughout the stand. Openings in the canopy are the size of individual trees. Such a forest would be reharvested about every 20 years.

- Group selection. About 30 percent of the tree volume was marked and trees were removed in clusters. The openings of 0.10 to 0.25 acre were created in the forest canopy. Under this plan, a forest is reharvested about every 20 years.

- Two age. Most of the trees larger than 10 inches in diameter at breast height were removed to simulate a stand dominated by half-mature trees. This stand will be ready for harvest in 50 years as most trees at that time will be in two size classes and be 50 and 100 years old, respectively.

- Shelterwood. About 60 percent of the canopy trees were removed, leaving a thin canopy over most of the tract. After sufficient numbers of new trees are established as saplings, the remaining canopy trees can be removed. This stand would not be ready for harvest for about 100 years.

- Clearcut. All canopy trees and smaller trees were cut, resulting in an even-aged forest that will not be logged again for another century.

Inventory

Prior to treatment, each forest stands stand was inventoried during the summer of 1998 and spring of 1999. All vascular plants growing within each stand were identified and placed in one of five abundance classes: 5: Abundant (an important dominant or codominant species); 4: Frequent (easily seen or found); 3: Occasional (scattered widely but easy to find); 2: Infrequent (few individuals or colonies in a number of locations and difficult to find); 5: Rare (limited to one or several locations and observed rarely).

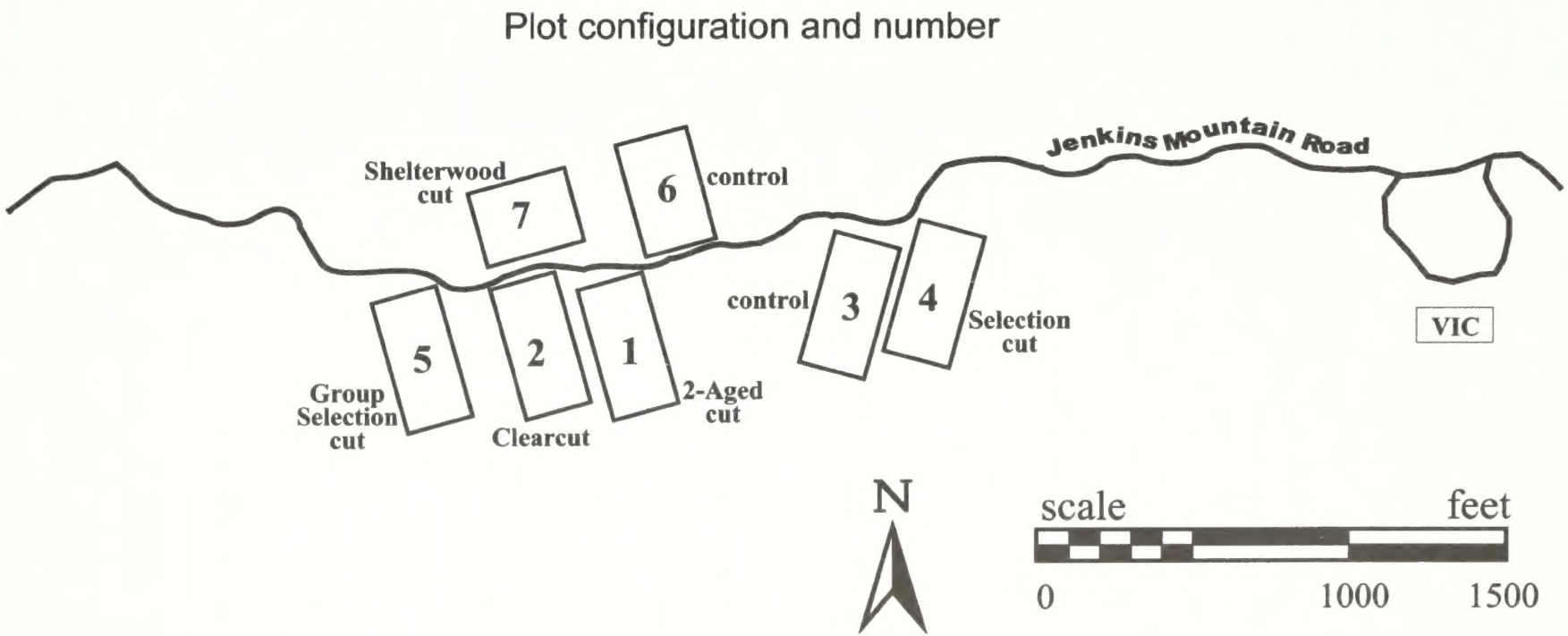


Figure 1.—Forest Ecosystem Research and Demonstration Area at the Adirondack Park Visitor Interpretative Center at Paul Smith's New York.

Species List

These stands are being re-inventoried periodically for future updates and comparsons of species lists. The list of vascular plants that follows includes common and scientific names, plant form, and abundance for five harvested and two control forest tracts (C1 = control 1, C2 = control 2, ST = single tree, GS = group selection , TA = two age, S = shelterwood, C = clearcut).

		Abundance						
Plant [a]	Form	C1	C2	ST	GS	TA	SW	CC
aster, tall flat - topped white (*Aster umbellatus*)	A	2	2	2		3		3
bedstraw (*Gallium triflorum*)	A	2	1	4		2	1	2
beechdrop (*Epifagus virginiana*)	A	3	4	2	2	1	3	1
bindweed, fringed (*Polygonum cilinode*)	A	1	2	2		2	1	2
bugle-weed, American (*Lycopus virginicus*)	A		3		2			4
cucumber root, Indian (*Medeola virginiana*)	A	3	3	3	3	3	3	3
dogbane, spreading (*Apocynum androsaemifolium*)	A	3		3	2	3	3	2
foamflower (*Tiarella cordifolia*)	A	3	3	3	1	3	2	3
ginseng, dwarf (*Panax trifolium*)	A	2	1	1				
goldenrod, rough-stemed (*Solidago rugosa*)	A	2	2	2	2		2	2
goldthread (*Coptis trifolia*)	A	3	1	4	3	3	3	2
Indian pipe (*Monotropa uniflora*)	A	3	3	2	3	2	3	3
lady slipper, pink (*Cypripedium acaule*)	A		1	1				
lettuce, tall white (*Prenanthes altissima*)	A	2						
lily, clinton's (*Clintonia borealis*)	A	3		3	2	3	3	3
lily, trout (*Erythronium americanum*)	A	1				1	1	
mayflower, Canada (*Maianthemum canadense*)	A	3	3	3	4	4	3	5
partridgeberry (*Mitchella repens*)	A	2	1	2		2	1	
rose twisted stalk (*Streptopus roseus*)	A	1	2	2				2
shinleaf (*Pyrola elliptica*)	A							2
Solomon's seal, false (*Smilacina racemosa*)	A	2	3	3	2	2	3	3
Solomon's seal, true (*Polygonatum pubescens*)	A	3	3	3	2	3	3	3
sorrel, common wood (*Oxalis acetosella*)	A	4	3	3	4	4	3	4
speedwell, common (*Veronica officinalis*)	A							1
spring beauty (*Claytonia caroliniana*)	A	1				1		
starflower (*Trientalis borealis*)	A	3	3	3	3	3	3	3
trillium, painted (*Trillium undulatum*)	A	3	2	3	3	3	3	3
trillium, purple (*Trillium erectum*)	A	3	3	3	3	3	3	3
violet, common blue *(Viola sororia)*	A	3	3	3	3	3	3	3
violet, false *(Dalibarda repens)*	A			2	2		2	2
violet, wild white (*Viola macloskeyi*)	A				1	1	1	1
club moss, shinning (*Huperzia lucidulum*)	B	4	5	4	4	5	5	5
fern, bracken (*Pteridium aquilinium*)	B	1		1				
fern, cinnamon (*Osmunda cinnamomea*)	B	1		2	2		1	4
fern, common polypody (*Polypodium virginianum*)	B	1						
fern, interrupted wood (*Dryopteris intermedia*)	B	4	4	3	4	4	4	4
fern, hay scented (*Dennstaedtia punctilobula*)	B	5	4	2	4	5	3	5
fern, interrupted (*Osmunda claytoniana*)	B			5		1	4	
fern, long beech (*Thelypteris phegopteris*)	B	2		2	1	1	2	

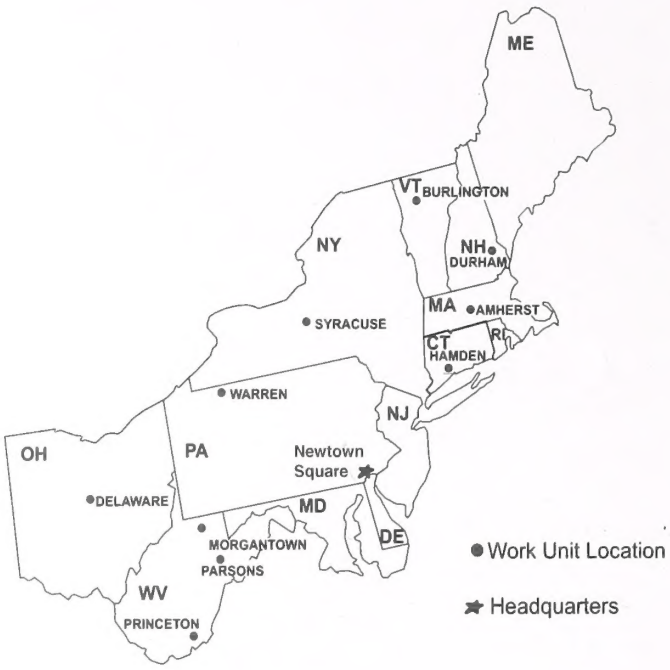
Plant [a]	Form	Abundance C1	C2	ST	GS	TA	SW	CC
fern, New york (*Thelypteris noveboracensis*)	B	2	2	2	4		4	5
fern, oak (*Gymnocarpium dryopteris*)	B	1						
fern, royal (*Osmunda regalis*)	B				1			
fern, sensitive (*Onoclea sensibilis*)	B	1	1	1	1		2	2
horsetail (*Equisetum arvense*)	B		1					
jack-in-the-pulpit (*Arisaema triphyllum* var. *tripyllum*)	B	3	3	3	2	3	3	2
princess pine (*Lycopodium obscurum*)	B	3		4	2	4		4
grass, long awned wood (*Brachyelytrum erectum*)	C	3	4	3	3	3	3	3
grass, rice (*Oryzopsis asperifolia*)	C	3		2				
bulrush, black (*Scirpus atrovirens*)	C				3	4	3	
sedge (no common name) (*Carex crinita* var. *gynandra*)	C	3	4	2	2	1	2	2
sedge (no common name) (*Carex brunnescens*)	C	3	1	3	3	2	2	3
sedge (no common name) (*Carex laxiflora*)	C	3						
sedge (no common name) (*Carex debilis*)	C	1	2	2	2	1	2	3
sedge (no common name) (*Carex intumescens*)	C	3	3	2		3		3
sedge (no common name) (*Carex leptonervia*)	C	1	2	1	3		1	2
blueberry, hillside (*Vaccinium myrtilloides*)	D			2				
blueberry, low bush (*Vaccinium angustifolium*)	D			2				
currant, skunk (*Ribes glandulosum*)	D	1		1				
dewberry, swamp (*Rubus hispidus*)	D			1	2	1		
dogwood, alternate leaved (*Cornus alternifolia*)	D			2				
elder, red berried (*Sambucus racemosa*)	D	3	3	3	2	3	3	3
honeysuckle, American fly (*Lonicera canadensis*)	D	3		3	2	3	3	2
raspberry, dwarf (*Rubus pubescens*)	D	2			2			2
raspberry, wild red (*Rubus idaeus*)	D		3	3	2	2	1	2
sarsaparilla (*Aralia nudicaulis*)	D	3	2	3	4	3	3	3
witchhobble (*Viburnum lantanoides*)	D	4	4	5	4	4	5	3
beech, American (*Fagus grandifolia*)	E	5	5	5	5	5	5	5
birch, yellow (*Betula alleghaniensis*)	E	4	4	4	5	3	3	3
bunchberry (*Cornus canadensis*)	E	1	2	3				2
cherry, black (*Prunus serotina*)	E	1		3	2	2		1
fir, balsam (*Abies balsamea*)	E	4	2	5	4	3	3	3
hemlock, eastern (*Tsuga canadensis*)	E	4		2	4	4	3	5
maple, red (*Acer rubrum*)	E	3	2	3	2	3	3	2
maple, striped (*Acer pensylvanicum*)	E	4	5	4	4	4	5	4
maple, sugar (*Acer sacharum*)	E	5	5	5	5	5	5	5
pine, eastern white (*Pinus strobus*)	E			2				
spruce, red (*Picea rubens*)	E	3	3	4	4	2	4	4

[a]Nomenclature from:

Gleason, H. A.; Cronquist, A. 1991. **Manual of vascular plants of northeastern United States and adjacent Canada.** 2nd ed. Bronx, NY: New York Botanical Garden. 910 p.

Kudish, M. 1992. **Adirondack upland flora: an ecological perspective.** Saranac, NY: Chauncy Press. 317 p.

Note: A = flowering herbs; B = ferns and primitive plants; C = grasses or grasslike; D = woody vines or shrubs; E = trees.



MANUSCRIPT RECEIVED FOR PUBLICATION

Published by:
USDA FOREST SERVICE
11 CAMPUS BLVD SUITE 200
NEWTOWN SQUARE PA 19073

April 2003

For additional copies:
USDA Forest Service
Publications Distribution
359 Main Road
Delaware, OH 43015
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